ABSTRACT OF THE DISCLOSURE

A passive navigation system for an airborne platform includes an on-board computer having a database that contains preprogrammed information regarding pre-existing ground-based signal emitters (e.g. cell-phone, television and radio broadcast transmitters). For each emitter, the database includes the geolocation of the emitter and identifying signal characteristic(s) of each emitter's signal such as frequency, bandwidth and strength. An antenna array and digital receiver cooperate with the computer on the platform to passively receive signals from the emitters and determine a direction of arrival (DOA) for selected signals. The computer also extracts identifying signal characteristic(s) from selected received signals and matches them against the database information to ascertain the geolocation of the emitter that corresponds to the received signal. The platform location is then calculated from the DOA(s) and emitter geolocations using a triangulation-type algorithm. Also, preprogrammed site-specific terrain scattering information can be compared to observed scattered signals to enhance system accuracy.